ABSTRACT OF THE DISCLOSURE

Methods and systems for encoding, transmitting and decoding digital images by rate-distortion adaptive zerotree-based residual vector quantization are disclosed. A method of the invention includes receiving a digital image, transforming the digital image into the wavelet domain generating a pyramid hierarchy, losslessly encoding a top LL subband from the pyramid hierarchy, encoding other subbands by vector quantization based on a zerotree insignificance prediction, generating an encoded image from the lossless encoding and vector quantization encoding, transmitting the encoded image along a communications channel, receiving the encoded image transmitted along the communications channel, reconstructing a zerotree from the encoded image, vector quantization decoding subbands from the encoded image other than a top LL subband, losslessly decoding the top LL subband from the encoded image, reverse wavelet transforming the top LL subband and the vector quantization decoded subbands and outputting a decoded image.